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UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS
DIVISION OF AGRICULTURAL ENGINEERING

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MONTHLY NEWS LETTER

WASHINGTON, D.C., May 20, 1926.

D. L. YARNELL REPORTS THAT THE BULLETIN CONTAINING THE RESULTS OF HIS TWO YEARS WORK ON THE FLOW OF WATER THROUGH CULVERTS OF VARIOUS TYPES WILL SHORTLY BE ISSUED FROM THE PRESS OF THE UNIVERSITY OF IOWA. THIS BULLETIN CONTAINS THE RESULTS OF SOME VERY ORIGINAL WORK AND SHOULD BE OF GREAT INTEREST, ESPECIALLY TO HIGHWAY AND RAILROAD ENGINEERS. THE EDITION WILL BE LIMITED BUT IT IS HOPED THAT ENOUGH COPIES CAN BE SECURED TO FURNISH A COPY TO EACH OF OUR ENGINEERS.

F. E. STAEBNER HAS STARTED ON A TRIP THAT WILL TAKE HIM THROUGH THE WESTERN AND NORTHWESTERN STATES IN CONNECTION WITH THE INVESTIGATION HE IS MAKING OF SOIL MOISTURE AS RELATED TO DRAINAGE AND IRRIGATION. HE WILL MAKE A SPECIAL STUDY OF METHODS USED IN WESTERN INSTITUTIONS IN SOIL SAMPLING, CENTRIFUGING, AND DETERMINING MOISTURE.

C. E. RAMSER IS MAKING A FIELD EXAMINATION FOR THE PURPOSE OF LOCATING SUITABLE SITES FOR CONDUCTING RUN-OFF INVESTIGATIONS IN INDIANA AND OHIO. THE DIVISION HAS DONE CONSIDERABLE RUN-OFF WORK IN THE LOWER MISSISSIPPI VALLEY. DURING THE PAST TWO YEARS ESPECIALLY, SOME VALUABLE DATA RELATING TO RUN-OFF HAVE BEEN SECURED IN ARKANSAS, MISSISSIPPI AND SOUTHEASTERN MISSOURI. IT IS FELT THAT WE NOW HAVE QUITE RELIABLE DATA WITH REGARD TO RUN-OFF IN THE DELTA COUNTRY, AND THE TIME HAS ARRIVED TO CARRY THESE INVESTIGATIONS INTO A DIFFERENT TYPE OF COUNTRY. INDIANA AND OHIO AFFORD A VERY GOOD FIELD AS PRACTICALLY NO WORK OF THIS CHARACTER HAS BEEN DONE IN THESE STATES, NOTWITHSTANDING THE FACT THAT THERE ARE MORE MILES OF OPEN DITCH IN INDIANA AND OHIO THAN IN ANY OTHER TWO STATES OF THE UNION.

W. W. McLAUGHLIN VISITED LAS VEGAS, NEW MEXICO, DURING THE LATTER PART OF APRIL TO LOOK OVER THE COOPERATIVE WORK IN WHICH W. L. STOCKWELL JR., IS ENGAGED. WHILE IN THAT VICINITY MR. McLAUGHLIN MET SECRETARY WORK AND DR. ELWOOD MEAD AND VISITED BLACK CANYON WITH A PARTY IN WHICH THEY WERE INCLUDED.

DR. SAMUEL FORTIER PREPARED A PAPER ENTITLED "SOIL MOISTURE RELATIONS AS APPLIED TO PLANT GROWTH AND CROP PRODUCTION," WHICH WAS READ AT THE THIRD ANNUAL MEETING OF THE ARIZONA STATE HORTICULTURAL SOCIETY AT PHOENIX APRIL 16-17.

D. W. BLOODGOOD IS GATHERING SOIL SAMPLES IMMEDIATELY BEFORE AND AFTER IRRIGATIONS ON THE NEW MEXICO EXPERIMENT STATION PLOTS TO DETERMINE THE PERCENTAGE OF MOISTURE IN THE SOIL AND TO FURNISH SAMPLES FOR DETERMINING THE MOISTURE EQUIVALENT AND WILTING COEFFICIENT OF SOILS UNDER IRRIGATION.

A NEW COMBINATION MOISTURE EQUIVALENT MACHINE HAS BEEN REQUISITIONED FOR PURCHASE BY THE EXPERIMENT STATION. MR. BLOODGOOD STATED THAT MORE PRECIPITATION FELL DURING APRIL THAN HAS BEEN RECORDED FOR MANY YEARS AND THAT THE ALFALFA IN MESILLA VALLEY WAS IN BLOOM AND WOULD BE CUT THREE TO FOUR WEEKS EARLIER THAN USUAL.

A. L. FELLOWS VISITED THE IRRIGATION SCHOOL FOR FARMERS AT OGALLALA, NEBR., EARLY IN THE MONTH AND GAVE SEVERAL TALKS ON IRRIGATION SUBJECTS. HE ALSO SPENT A DAY LOOKING OVER THE PROPOSED PERKINS COUNTY (NEBRASKA) IRRIGATION PROJECT, FOR WHICH IT IS PROPOSED THAT THE WATERS OF SOUTH PLATTE RIVER, GUARANTEED TO THE STATE OF NEBRASKA BY THE STATE OF COLORADO UNDER THE TERMS OF AN INTERSTATE TREATY, SHALL BE USED.

L. T. JESSUP MEASURED SOME 40 DRAINAGE OUTLETS IN YAKIMA COUNTY, WASH., IN COOPERATION WITH THE COUNTY DRAINAGE ENGINEER. ON SOME DISTRICTS GREATER MAXIMUMS ARE EXPECTED THAN HAVE EVER OCCURRED BEFORE DUE TO VERY EARLY AND HEAVY APPLICATIONS OF IRRIGATION WATER.

MESSRS. PARSHALL AND ROHWER HAVE BUILT AND INSTALLED AT THE FORT COLLINS, COLORADO, HYDRAULIC LABORATORY A MODEL 6-INCH IMPROVED VENTURI FLUME FOR THE PURPOSE OF MAKING FURTHER TESTS TO SUBSTANTIATE PREVIOUS WORK DONE AT THE FIELD LABORATORY AT BELLVUE. THROUGH ARRANGEMENT WITH THE OFFICIALS OF JACKSON DITCH, A 6-FOOT IMPROVED VENTURI FLUME HAS BEEN INSTALLED IN THAT DITCH DOWNSTREAM FROM THE BELLVUE LABORATORY AND EQUIPPED WITH A LARGE FLOAT WELL AND INSTRUMENT HOUSE. IT IS PROPOSED TO OPERATE THIS SEASON IN CONNECTION WITH THIS FLUME A NUMBER OF INSTRUMENTS FOR THE PURPOSE OF MAKING FIELD OBSERVATIONS OF VARIOUS METHODS OF DETERMINING THE ACTUAL ACRE-FOOT DISCHARGE OF WATER OVER A PERIOD OF TIME.

CARL ROHWER STATES THAT IN COMPARING THE OBSERVED EVAPORATION FROM THE 85-FOOT CIRCULAR CONCRETE STORAGE RESERVOIR AT THE FORT COLLINS LABORATORY WITH THE RESULTS COMPUTED FROM THE EVAPORATION FORMULA $E = (E_s - E_d) (0.44 + 0.118 W)$ DERIVED FROM A 3-FOOT SQUARE TANK, IT WAS FOUND THAT, AFTER APPLYING THE CORRECTIONS DETERMINED BY MR. SLEIGHT FOR TANKS OF DIFFERENT SIZES, THE RESULTS OBTAINED WERE IDENTICAL.

COLIN A. TAYLOR STATES THAT SUMMARIES FOR THE WINTER SEASON OF OCTOBER, 1925, TO MARCH, 1926, IN THE COOPERATIVE DUTY OF WATER STUDIES IN SAN DIEGO COUNTY, CALIFORNIA, SHOW A GROSS USE OF WATER FOR FIVE MONTHS VARYING FROM 8.49 INCHES AT VISTA TO 14.39 INCHES AT ESCONDIDO, RAINFALL BEING THE PREDOMINATING FACTOR IN THESE FIGURES. THE BEST EXAMPLE OF A LOW USE OF WATER ON A GOOD PRODUCING LEMON GROVE IS ON A PLACE NEAR VISTA WHICH YIELDED 107 BOXES OF LEMONS PER ACRE AT THE MARCH PICKING WITH THE FOLLOWING USE OF WATER:

DECREASE IN SOIL MOISTURE CONTENT OCT. 8 TO MAR. 22	- 1.20 IN.
IRRIGATION, JANUARY 9	.90
RAIN IN STORMS GREATER THAN 0.50 INCH	5.89
RAIN IN STORMS LESS THAN 0.50 INCH	1.14
GROSS USE OF WATER OCT. 8 TO MAR. 22	9.13 IN.

THE FOLLOWING REPORTS HAVE BEEN RECEIVED BY THE BERKELEY OFFICE.

"AN ANALYSIS OF DRAINAGE DISCHARGE OF THE RIO GRANDE PROJECT,"
BY R. A. HART.

"SPANISH-AMERICAN COMMUNITY ACEQUIAS," BY WELLS A. HUTCHINS.

"ECONOMIC LIMITS OF COST OF WATER FOR IRRIGATION, CARLSBAD
RECLAMATION PROJECT, NEW MEXICO," BY PAUL A. EWING.

"DEVELOPMENT OF GROUND WATER FOR USE IN IRRIGATION IN UTAH,"
BY L. M. WINSOR.

"THE EFFECT OF CONSOLIDATION OF RELATED IRRIGATION ENTERPRISES
ON THE ECONOMIC UTILIZATION OF LAND AND WATER RESOURCES,"
BY L. M. WINSOR.

"MEMORANDUM CONCERNING COMPARISON OF LOSS IN EVAPORATION FROM
A FREE WATER SURFACE AND SAND SURFACE WITH WATER TABLE AT
1-INCH DEPTH," BY R. L. PARSHALL.

"SOME FACTORS AFFECTING THE IRRIGATION REQUIREMENTS OF DECIDUOUS
ORCHARDS," BY F. J. VEIHMAYER.

THE SESQUICENTENNIAL EXPOSITION TO BE OPENED JUNE 1 AT PHILADELPHIA IS TO INCLUDE EXHIBITS BY VARIOUS BUREAUS OF THE DEPARTMENT OF AGRICULTURE. THE DIVISION IS PLANNING A VERY INTERESTING DISPLAY CONSISTING OF A PANEL SHOWING THE PROGRESS IN THE USE OF FARM POWER SINCE 1776 AND THREE BOOTHS SHOWING BY MEANS OF PHOTOGRAPHIC ENLARGEMENTS AND TEXT MATTER, HOW AGRICULTURAL ENGINEERING AIDS AGRICULTURE. THE MODEL FARM HOUSE DISPLAY MENTIONED IN A RECENT ISSUE HAD TO BE GIVEN UP OWING TO THE COST OF THE PROJECT.

W. M. HURST WAS APPOINTED JUNIOR AGRICULTURAL ENGINEER, EFFECTIVE MAY 17. MR. HURST IS A GRADUATE OF THE AGRICULTURAL ENGINEERING DEPARTMENT, IOWA STATE COLLEGE. HIS FIRST ASSIGNMENT WILL BE TO ASSIST MR. KINSMAN IN CONNECTION WITH AN INVESTIGATION OF THE USE OF COMBINED HARVESTER-THRESHERS IN THE MIDDLE WEST. THIS WORK WILL BE DONE IN COOPERATION WITH THE BUREAU OF AGRICULTURAL ECONOMICS AND SOME OF THE COLLEGES OF THE PLAINS STATES.

C. D. KINSMAN AND E. W. HUNTER ARE ENGAGED IN THE PREPARATION OF A FARMERS' BULLETIN ON THE LUBRICATION OF FARM MACHINERY. MR. HUNTER IS ALSO COLLABORATING WITH MR. SENNER ON A FARMERS' BULLETIN RELATING TO THE USE OF THE OIL BURNER FOR DOMESTIC HEATING. BOTH OF THESE MANUSCRIPTS WILL BE READY TO SUBMIT IN THE NEAR FUTURE.

MR. KINSMAN IS IN TEXAS MAKING A STUDY OF THE COMBINED HARVESTER.

MR. WARREN HAS PREPARED A LAYOUT OF MAINS AND HYDRANTS SO AS TO INCREASE THE FIRE PROTECTION OF THE BUILDINGS AT ARLINGTON FARM.

MR. BETTS EXPECTS SHORTLY TO START ON A TRIP THROUGH THE CENTRAL WEST TO MAKE A STUDY OF POULTRY PACKING AND FATTENING PLANTS.

SHIPMENTS OF EXPLOSIVES FOR LANDCLEARING DURING APRIL WERE AS FOLLOWS: BARKSDALE, 1,238,900 LBS; DU PONT, 546,550 LBS; GIBBSTOWN, 185,850 LBS. THE LANDCLEARING SEASON IS ABOUT OVER AND THERE WILL BE LITTLE DEMAND FOR EXPLOSIVES UNTIL NEXT FALL. WE ARE PREPARING FOR NEXT YEAR'S CAMPAIGN AND ARE ABOUT TO DISTRIBUTE THE CUSTOMARY AGREEMENTS FOR COOPERATION WITH THE VARIOUS STATE EXTENSION SERVICES. THE APPROPRIATION ACT FOR

The following reports have been received by the Berkeley office:

"An Analysis of Drainage Discharge of the Rio Grande Project,"

by R. A. Hart.

"Spanish-American Community Activities," by Willie A. Hutchinson.

"Economic Limits of Cost of Water for Irrigation, California,"

Reclamation Project, New Mexico, by Paul A. Smith.

"Development of Ground Water for Use in Irrigation in Utah,"

by J. M. Winsor.

"The Effect of Consolidation of Related Irrigation Enterprises

on the Economic Utilization of Land and Water Resources,"

by J. M. Winsor.

"Memorandum Concerning Comparison of Loss in Evaporation from

a Four Water Surface and Sand Surface with Water Table at

1-inch Depth," by R. L. Farabee.

"Some Factors Affecting the Irrigation Requirements of Deciduous

Orchards," by F. D. Weinberger.

The Eschscholtz Memorial Exposition to be opened June 1 at Philadelphia

is to include exhibits by various bureaus of the Department of Agriculture.

The Division is planning a very interesting display consisting of a panel

showing the progress in the use of farm power since 1776 and three booths

showing by means of photographic enlargements and text matter, how

cultural engineering aids agriculture. The model farm house display

mentioned in a recent issue was to be given up going to the cost of the project.

Mr. A. Hurst was appointed Junior Agricultural Engineer, effective

May 17. Mr. Hurst is a graduate of the Agricultural Engineering Department,

Iowa State College. His first assignment will be to assist Mr. Kinsman in

connection with an investigation of the use of combined harvesting machines

in the Middle West. This work will be done in cooperation with the Bureau

of Agricultural Economics and some of the colleges of the Plains States.

D. O. Kinsman and E. W. Hunter are engaged in the preparation of a

Farmers' Bulletin on the lubrication of farm machinery. Mr. Hunter is also

collaborating with Mr. G. W. G. on a Farmers' Bulletin relating to the use of

the oil burner for domestic heating. Both of these manuscripts will be ready

to submit in the near future.

Mr. Kinsman is in Texas making a study of the combined harvester.

Mr. Warren has prepared a layout of main and hydrant as to

increase the fire protection of the buildings at Arlington Farm.

Mr. Betts expects shortly to start on a trip through the Central

West to make a study of poultry raising and fattening plants.

Shipments of explosives for landclearing during April were as

follows: Barksdale, 1,238,000 lbs.; Bu. Fort, 242,500 lbs.; Bismarck,

165,800 lbs. The landclearing season is about over and there will be little

demand for explosives until next fall. We are preparing for next year's

campaign and are about to distribute the customary agreements for cooperation

with the various State Extension Services. The Appropriation Act for

1927 PERMITS THE USE OF THESE EXPLOSIVES FOR ANY KIND OF AGRICULTURAL WORK. HERETOFORE THEIR USE HAS BEEN LIMITED TO CLEARING FARM LAND OF STUMPS AND STONES.

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